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**Claims**

1. Method for optimizing measurement and control of the flatness of a strip of rolled material, where a first mapping is made of the strip after passing through a mill

5 stand,

**characterized by,**

- that a second mapping is made between measurement and control.

10 2. Method according to claim 1,

**characterized by,**

- that a second mapping is done by associating to relevant flatness fault types a reference strip model and an actuator space conversion matrix.

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3. Method according to any of the preceding claims,

**characterized by,**

- visualizing of the strip,

- determining the relevant flatness fault type by comparing the visualization to one or more reference strip models,

- choosing an associated and relevant actuator space conversion matrix,

- morphing the visual picture with the measured information.

25 4. Method according to any of the preceding claims,

**characterized by,**

- that an enhanced mapping is made between measurement and control by an actuator correction algorithm using morphed information.

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5. Method according to any of the preceding claims,

**characterized by,**

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- creating a set of reference strip models for known flatness fault types,
  - creating a set of space conversion matrices, which are known to correct the known flatness fault types by
  - 5 optimizing the flatness control,
  - mapping each reference strip model to its corresponding vector space conversion matrix according to the flatness fault type.
- 10 6. Method according to any of the preceding claims,  
**characterized by**,
- selecting a reference strip model by comparing available reference strip models with the actual strip.
- 15 7. Method according to any of the preceding claims,  
**characterized by**,
- enhancing the measured data by interpolating the reference model with measured flatness data, i.e. by using morphing.
- 20 8. Method according to any of the preceding claims,  
**characterized by**,
- optimizing the control with the space conversion matrix.
9. Method according to any of the preceding claims,
- 25 **characterized by**,
- converting actual strip to the visualization format used for reference strip models.
10. Method according to any of the preceding claims,
- 30 **characterized by**,
- having visual access to the strip by an operator.

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11. Method according to any of the preceding claims,  
**characterized by,**

- comparing reference strip models with actual strip visualization format.

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12. Method according to any of the preceding claims,  
**characterized by,**

- manually tuning the automatic comparison.

10 13. Method according to any of the preceding claims,

**characterized by,**

- synchronizing measured data with video samples and with the currently performed optimization algorithm.

15 14. Method according to any of the preceding claims,

**characterized by,**

- using a morphing technique.

20 15. Method according to any of the preceding claims,  
**characterized by,**

- adding the result of the mapping by morphing to the measured information from a reference model.

25 16. Device for optimizing measurement and control of the flatness of a strip of rolled material,

**characterized by,**

- means for accomplishing a mapping by associating to relevant flatness fault types a reference strip model and an actuator space conversion matrix.

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17. Device according to claim 16,  
**characterized by,**

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- having means for making the mapping between measurement and control.

18. Device according to claim 16 or 17,

5 **characterized by,**

- having means for making the mapping between measurement and control by an actuator correction algorithm.

19. Device according to any of the claims 16-18,

10 **characterized by,**

- means for creating a set of reference strip models for known flatness fault types,

- means for creating a set of space conversion matrices, which are known to correct the known flatness fault types by

15 optimizing the flatness control,

- means for mapping each reference strip model to its corresponding vector space conversion matrix according to the flatness fault type.

20 20. A computer program comprising computer program code means for carrying out the steps of a method according to claim 1-15.

21. A computer readable medium comprising at least part of a  
25 computer program according to claim 19.

22. A computer program, according to claim 19, that is, at least partially, provided through a network, such as e.g. internet.